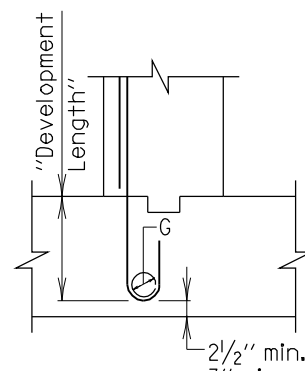


STANDARD 90° HOOK



STANDARD 180° HOOK

BAR SIZE	* LOCATION CATEGORY		
	D	E	F
#4	8"	11"	9"
#5	9"	1'-1"	11"
#6	11"	1'-4"	1'-1"
#7	1'-1"	1'-6"	1'-3"
#8	1'-3"	1'-9"	1'-5"
#9	1'-5"	1'-11"	1'-7"
#10	1'-7"	2'-2"	1'-9"
#11	1'-9"	2'-5"	1'-11"

RECOMMENDED END HOOKS ALL GRADES			
BAR SIZE	Finished bend diameter G in.	180 Degree hooks	90 Degree hooks
#4	3"	6"	8"
#5	3 3/4"	7"	10"
#6	4 1/2"	8"	1'-0"
#7	5 1/4"	10"	1'-2"
#8	6"	11"	1'-4"
#9	9 1/2"	1'-3"	1'-7"
#10	10 3/4"	1'-5"	1'-10"
#11	1'-0"	1'-7"	2'-0"

* LOCATION CATEGORY:

D- All bars terminating with a standard 180° hook with side cover (normal to plane of hook) not less than 2 1/2", and for 90° deg. hook, cover on bar extension beyond hook not less than 2".

E- All bars not in Category D.

F- All bars with hook enclosed vertically or horizontally within ties or stirrup-ties spaced along the full development length not greater than 3d where d is the diameter of the hooked bar.

Note:

- When development length is not specified on the Plans, the above dimensions shall be used.
- These development lengths do not apply when bar is in lightweight concrete or any other strength of concrete.
- These development lengths only apply where the General Notes indicate "Reinforcing Steel Design, $f_s = 24,000$ p.s.i."
- If depth of member does not allow bar development length indicated in Categories A, B, and C: Std. No. M(6.14)-90-214; then hook shall be added to all bars not conforming, as per D, E & F.

APPROVAL	
<i>E. S. Friedman</i> DIRECTOR	OFFICE OF STRUCTURES
DATE: 4/4/86	
REVISIONS	
SHA	FHWA
11-23-93	.
1-22-01	.
9-20-05	.
12-4-07	.

FHWA APPROVAL
DATE: 6-8-90

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES
DEVELOPMENT LENGTH DIMENSIONS OF HOOKED
BARS FOR GRADE 60 REINFORCING STEEL
IN MIX NO. 3 (3500 P.S.I.) CONCRETE
NON-EPOXY COATED REINFORCING

STANDARD NO. M(6.08)-86-178

SHEET 1 OF 1

MISCELLANEOUS